STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1588 West North Temple
Salt Lake City, Utah 84116

1981 ANNUAL OPERATIONS AND PROGRESS REPORT

(To be filed for each Mining Operation
at the end of each calander year)

OPERATOR: Geokinetics Inc.

ADDRESS: 391 Chipeta Way D-2
Salt Lake City, Utah

REPRESENTATIVE: James Lekas

MINE NAME: Experimental Site #1

PERMIT NUMBER: Act/047/002

SEC. 2 T. 14S R. 22E SLBM

DATE OF APPROVAL: March 23, 1979

(1) Section 40-8-15 and Rule M-8 of the Utah Mined Land Reclamation Act, require each operator to include with this report and up-dated map and plan prepared in accordance with Rule M-3, providing a detailed status of all mining and reclamation activities which have occurred during the past year.

(2) The gross amount of materials moved during the year for this mining operation was: No material was mined. Vegetation was disturbed on approximately 7.0 acres during 1981. An updated map depicting such disturbance is included with this report (Figure 1). (See note below).

The disposition of each type of material was: _____

Note: Geokinetics utilizes an in-situ process to recover oil from oil shale. Therefore, no material is actually moved from one locality to another. Land disturbance is limited to vegetation removal on true in-situ retort surfaces and adjacent access and haul roads.

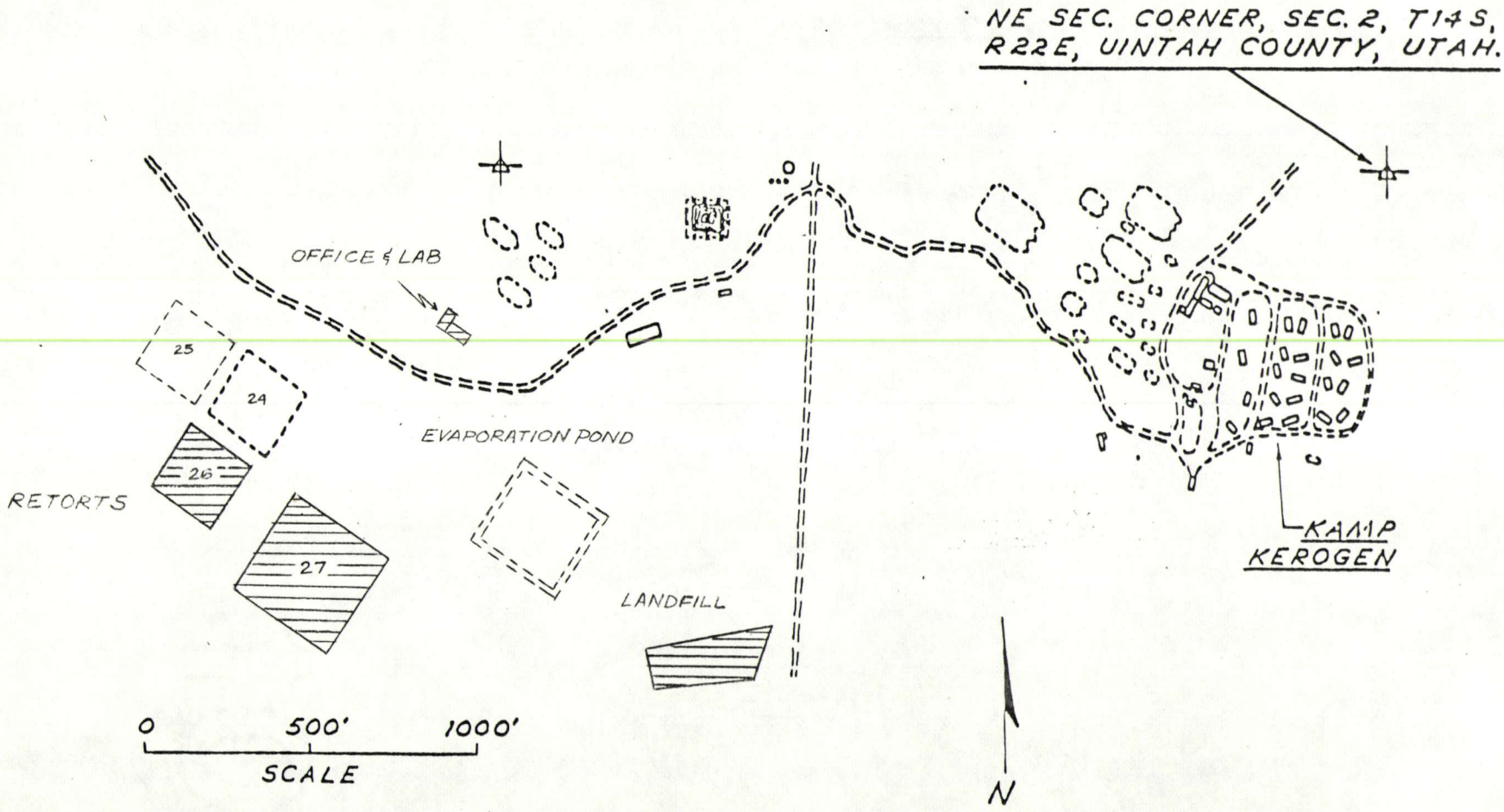
(3) STATUS OF RECLAMATION WORK*

Month	Number of Acres	Type of Work Performed	Results (Revegetation Success)
January			
February			
March			
April			
May			
June			
July			
August			
September			
October			
November			
December			

*The monthly status of reclamation work should include such items as clean-up, regrading, recontouring, soil preparation, seeding, etc., and may be outlined on a separate sheet if necessary.

A brief summary of reclamation work performed during 1981, and additional enclosures describing such work are included with this report.

AREAS OF DISTURBANCE
(Figure 1)



GEOKINETICS, INC.

HRG

Geokinetics is currently researching and developing a true in-situ process to extract oil from oil shale, under a co-operative agreement with the U.S. Department of Energy. A small amount of land disturbance is associated with this extraction process. Reclamation research is presently being conducted on these disturbed areas to collect information in order to develop reclamation techniques that are economically viable, easily accomplished, and have high rates of success for short-term stabilization and long-term utilization.

A brief description of the reclamation research conducted during 1981 is discussed below:

1981 Retort Revegetation Status Report

In July 1981, a field reconnaissance was conducted by ERO Resources Corporation to evaluate seeded retorts at Geokinetics oil shale site. Two (2) retorts planted in 1979 (Retorts 14 and 15)were sampled quantitatively for cover and productivity. In addition, a qualitative survey of Retorts 17 and 18 (planted in 1980) was conduced during the field reconnaissance.

Evaluation of the revegetation success for the seeded retorts focused on the following areas of interest:

- individual species success
- comparison of total cover and productivity of seeded retorts with native vegetation types
- success of planting and seedbed preparation techniques
- comparison of techniques used in 1979 seeding verses 1980 seeding

Results of the above areas of evaluation indicated that a successful establishment of a diverse and vigorous perennial stand was accomplished on Retorts 14 and 15; whereas efforts to establish a perennial grass stand on Retorts 17 and 18 were unsuccessful. The primary factor determing the success and failure of the above sites were seedbed preparation techniques. Retorts 14 and 15 were heavily roughened prior to planting, creating the necessary microsites for seed germination in semi-arid to arid environments. Retorts 17 and 18 were only slightly roughened, thus inhibiting successful seed germination.

A report presenting these findings has been included with this letter.

Retort 17 Revegetation Research

Retort 17 was reseeded in the fall of 1981 to evaluate additional seedbed preparation techniques from those utilized in 1980. These techniques included shallow ripping and informal contour furrowing.

The following plant species were seeded at a rate of 20 lbs per acre over an area of 1.5 acres (Figure 2):

Species	Percent Mix
Agropyron intermedium	30
A. trichophorum	30
A. smithii	20
A. dasytachyum	10
Oryzopsis hymenoides	10

An initial evaluation of the revegetation success for Retort #17 will be conducted in the summer of 1982.

U.S. Forest Service Revegetation Studies

The cooperative agreement with the U.S. Forest Service Shrub Science Laboratory was continued during 1981 to further evaluate the success of a variety of plant species on burned/uplifted retort surfaces.

Retorts 10 and 18 were selected for the 1981 study. Approximately 900 plants of 24 different species (14 shrubs, 6 grasses, 2 trees, and 2 herbs) were planted on the retort surfaces according to a study plan developed by the U.S. Forest Service. Plant species were watered periodically and monitored for survival during the first growing season.

Survival and growth measurements were taken at the end of the growing season on both Retorts 10 and 18. Overall, survival rates for Retorts 10 and 18 were 89.6 percent and 66.9 percent respectively.

Over the winter survival measurements, as well as survival and growth measurements in the following fall, will be conducted in 1982 to further evaluate the adaptability of the various plant species on retort surfaces.

REVEGETATION RESEARCH AREAS
(Figure 2)